

[SPECIFICATION]

[TITLE OF THE INVENTION]

Construction of tub cover of full automatic washing machine

[BRIEF DESCRIPTION OF THE DRAWINGS]

FIG. 1 is a sectional view of a related art washing machine;

FIG. 2 is an enlarged sectional view of a tub cover of a related art washing machine;

FIG. 3 is an enlarged sectional view of a tub cover of a washing machine in accordance with the first embodiment of the present invention;

FIG. 4 is an enlarged sectional view of a tub cover of a washing machine in accordance with the second embodiment of the present invention; and

FIG. 5 is an enlarged sectional view of a tub cover of a washing machine in accordance with the third embodiment of the present invention.

- Description of reference numerals for main parts in the drawings.

105: outer tub

107: second spatial part

111: tub cover

112: flange

113: inner bent

114: first spatial part

115: outer bent

117: first sealing member

121: connecting part

125: second sealing member

131: outer rib

132: inner rib

133: third spatial part

141: plane part

142: insert rib

151: third sealing member

152: adhesive

[DETAILED DESCRIPTION OF THE INVENTION]

[OBJECT OF THE INVENTION]

[FIELD OF THE INVENTION AND DISCUSSION OF THE RELATED ART]

The present invention relates to a construction of a tub cover of a full automatic washing machine, and more particularly, to the tub cover of a full automatic washing machine in which washing water being provided to an inner tub is prevented from being leaked through the tub cover and an outer tub by forming an outer bent on a flange of the tub cover and connecting the upper part of the outer tub to a spatial part between the outer bent and an inner bent.

FIG. 1 is a sectional view of a related art pulsator washing machine based on an agitation type. The washing machine 1 includes an outer tub 2, an inner tub 3, a pulsator 4, a washing shaft 6, a dewatering shaft 6-1, a clutch 7, a motor 8, and a drain valve 9. The outer tub 2 is for storing washing water. The inner tub 3 is installed inside the outer tub 2 for washing laundry. The pulsator 4 is installed on the inner bottom face of the inner tub 3 for performing the agitation washing process by providing a mechanical rotating force to the laundry by rotating in regular and reverse directions. The washing shaft 6 is coupled to the pulsator 4 for rotating the pulsator 4 in the regular and reverse directions. The dewatering shaft 6-1 is coupled to the inner tub 3 for rotating the inner tub in one direction. The clutch 7 couples the washing shaft 6 with the dewatering shaft 6-1 or separates them from each other. The motor 8 is connected to the clutch 7 by a belt and delivers the rotating force to drive the

clutch 7. The drain valve 9 is coupled to the outer tub 2 to discharge the washing water in the outer tub 2 out of the washing machine.

An operation of the related art washing machine will be described below.

First, laundry is put into an inner tub 3 of a washing machine and washing water is provided when a start button is pressed. When more than a certain amount of washing water is provided into the inner and outer tubs 3 and 2, water supply is stopped by a sensor.

At the same time as the water supply is stopped, the motor 8 rotates in regular and reverse directions to rotate the washing shaft 6 in regular and reverse directions as well.

Accordingly, the pulsator 4 being connected to the washing shaft 6 is rotated in both regular and reverse directions, thereby performing the washing process.

When the washing process is completed, the drain valve 9 is opened to drain the washing water in the outer tub 2, thereby performing the draining process.

To perform the dewatering process after the draining process is completed, the inner tub 3 and the pulsator 4 rapidly rotate together in one direction in a state that the washing shaft 6 and the dewatering shaft 6-1 are coupled with each other. In this way, the washing water in the inner tub 3 is drained to the outer tub 2 through a plurality of washing holes 5 and the washing water drained to the outer tub 2 is drained out of the washing machine through the drain valve 10.

In the related art washing machine, however, as the washing process is performed by the agitation caused by the regular and reverse rotations of the pulsator, damage to and entangling of the laundry inevitably comes to occur.

Also, because a lot of washing water need to be provided to the outer tub 2 to wash and rinse the laundry, the amount of the washing water and detergent and time for supplying and draining washing water are increased.

Especially, as shown in FIG. 2, as the tub cover 11 is fastened to the outer tub 2 by a plurality of screws 14, gaps between the tight fit portions, that is between the flange 12 and the outer tub 2, may be generated. Also, inserting portions 13 of the tub cover 11 are not completely fitted to the outer tub 2. Accordingly, the washing water leaks through gaps between the inserting portions 13 and the outer tub 2.

[TECHNICAL TASKS TO BE ACHIEVED BY THE INVENTION]

Accordingly, the present invention is directed to a construction of a tub cover of a full automatic washing machine that substantially obviates one or more of the problems due to limitations and disadvantages of the related art.

An object of the present invention is to provide a washing machine, in which washing water provided to an inner tub again after going upward through the inner and outer tubs is prevented from being leaked through a tub cover and an outer tub.

Another object of the present invention is to provide a washing machine, in which a sealing member is fitted between a tub cover and an outer tub with ease and vibrations during the washing process is prevented as their seismic centers are accord.

Additional advantages, objects, and features of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of the invention. The objectives and other advantages of the invention may be realized and attained by the structure particularly pointed out in the written description and claims hereof as well as the appended drawings.

To achieve these objects and other advantages and in accordance with the purpose of the invention, as embodied and broadly described herein, a construction of a tub cover of a washing machine of the present invention includes a first spatial part being formed between

inner and outer bents by forming the outer bent on a flange of a tub cover, the first spatial part to which the upper part of the outer tub is coupled.

In another aspect of the present invention, the object of the present invention is obtained by forming a second partial part on the upper part of an outer tub, to which a connecting part is inserted after forming the connecting part on the flange of the tub cover.

In another aspect of the present invention, the object of the present invention is obtained by sticking a plane part of the tub cover and an end of an insert rib to inner faces of the inner and outer ribs after forming inner and outer ribs on the outer tub.

[PREFERRED EMBODIMENTS OF THE INVENTION]

A construction of a tub cover of a washing machine of the present invention will be described in detail with reference to FIGs. 3 to 6.

The figures show tub covers with a leakage prevention means for preventing washing water from being leaked between a tub cover 111 and an outer tub 105, when the washing water is pushed up to the interval of inner and outer tubs 104 and 105 by the centrifugal force generated by a rapid rotation of the inner tub 104.

The leakage prevention means includes an outer bent 115, a first spatial part 114, and a first sealing member 117. The outer bent is formed on a flange 112 of the tub cover 111. The first spatial part 114 is formed between the inner and outer bents 113 and 115 to which the upper part of the outer tub 105 can be inserted. The first sealing member 117 is inserted to the first spatial part 114 for sealing up the first spatial part 114.

In another aspect of the present invention, the leakage prevention means of the tub cover includes a connecting part 121, a second spatial part 107, and a second sealing member 125. The connecting part 121 is projected from the flange 112 of the tub cover 111, facing down. The second spatial part 107 is formed on the upper part of the outer tub 105, to which the connecting part 121 is guided and inserted. The sealing member 125 is inserted to the

second spatial part 107 for sealing up the second spatial part 107.

In another aspect of the present invention, the leakage prevention means of the tub cover includes an outer rib 131, an inner rib 132, a plane part 141, an insert rib 142, and a third sealing member 151. The outer rib 131 is formed on the upper part of the outer tub 105, facing up. The inner rib 132 is formed on the upper part of the outer rib 105, facing up and to be shorter than the outer rib 131 with constant intervals between the outer rib 131 and itself. The plane part 141 is formed on the tub cover 111 for sealing up the inner rib 132 by being stuck to the upper face of the inner rib 132. The insert rib 142 is formed on the tub cover 111 for sealing up the outer rib 131 by sticking and coupling its end to an inner face of the outer rib 131.

The third sealing member 151 is connected between the inner rib 132 and the plane part 141 for sealing up the interval of the inner rib 132 of the outer tub 105 and the plane part 141 of the tub cover 111. Also, the sealing member 151 is attached to an inner face of an insert rib 142 and the plane part 141 of the tub cover 111 by an adhesive 152. A third spatial part 133 is additionally provided between the inner and outer ribs 132 and 131 to accumulate washing water passing through the interval between the inner rib 132 of the outer tub 105 and the plane part 141 of the tub cover 111 or washing water passing through between the inner rib 132 of the outer tub 105 and the third sealing member 151.

An operation of a tub cover of a washing machine of the present invention will be described below.

First, laundry is put into an inner tub 104 of a washing machine 101. Then, washing water is provided when a start button is pressed. When more than a certain amount of washing water is provided in the inner tub 104 and an outer tub 105, water supply is stopped and the washing cycle is started. The washing cycle is performed by the rotation of a motor 102. That is, a driving shaft 103 is rotated in regular and reverse directions by regular and reverse

rotations of the motor 102 and the inner tub 104 is rotated in regular and reverse directions by the regular and reverse rotations of the driving shaft 103.

In this way, the washing operation is performed by a water flow of the washing water, the water flow being generated by regular and reverse rotations of the inner tub 104. At this time, the number of the rotation of the motor 102 need to increase. That is, when the number of the rotation of the motor 102 fully increases, the number of rotation of the driving shaft 103 and the inner tub 104 increase as well, thereby strengthening the centrifugal force. Accordingly, the laundry is pushed to the inner faces of the inner tub 104 by the centrifugal force and the washing water passes through textures of the laundry. In this way, the laundry is washed better as contaminants on the laundry is peeled off by the washing water passing through the textures of it.

The washing water which passed through the textures of the laundry is drained to the outer tub 105 through washing holes of the inner tub 104. Then, the washing water drained to the outer tub 105 goes up along the interval of the inner and outer tubs 104 and 105 by the centrifugal force generated by the rapid rotation of the inner tub 104. Of course, the washing water provided on the bottom face of the outer tub 105 also goes up to the upper part along the interval of the inner and outer tubs 104 and 105 by the centrifugal force.

At this time, as shown in FIG. 3, a tub cover 111 being coupled to the outer tub 105 for providing the ascending washing water to the inner tub 104 guides the upper part of the outer tub 105 to the first spatial part 114 to connect it thereto. In this way, seismic centers of the tub cover 111 and the outer tub 105 are accorded, thereby preventing vibration when the assembly process is completed. Also, the assembly process is simplified and excellent sealing effect is obtained.

FIG. 4 is a diagram illustrating the second embodiment of the present invention. As shown in FIG. 4, a connecting pat 121 being formed on the flange 121 of the tub cover 111 is

guided and connected to the second spatial part 107 being formed on the outer tub 105. In this way, the seismic centers of the tub cover 111 and the outer tub 105 are accorded, thereby preventing vibrations when the assembly process is completed.

FIG. 5 is a diagram illustrating the third embodiment of the present invention. As shown in FIG. 5, one end of the insert rib 142 is stuck and connected to the outer rib 131 to accord their seismic centers, thereby preventing vibrations when the assembly process is completed. Also, a third sealing rib 151 is coupled between the inner rib 132 of the outer tub 105 and the plane part 141 of the tub cover 111, thereby preventing the washing water from being leaked through the interval of the tub cover 111 and the outer tub 105. At this time, the third sealing rib 151 is strongly attached to an inner face of the insert rib 142 and the plane part 141 of the tub cover 111 by the adhesive 152.

Also, even though the third sealing member 151 fails to form a perfect circle, the washing water is prevented from being leaked as the upper face of the inner rib 132 of the outer tub 105 is fully covered.

Also, even though the washing water passes through the interval of the inner rib 132 and the third sealing member 151, the washing water is secondly accumulated on the third spatial part 133 being formed between the inner rib 132 and the outer rib 131. The washing water accumulated on the third spatial part 133 is automatically drained to an overflow hose (not shown) being connected to a drain hose.

[ADVANTAGE OF THE INVENTION]

In a construction of washing machine tub cover of the present invention, washing water provided to an inner tub after going upward through the inner and outer tubs is prevented from being leaked through a tub cover and the outer tub. Also, a sealing member is easily coupled between the tub cover and the outer tub. Finally, vibration during the washing process is prevented as the seismic centers of the tub cover and the outer tub are accorded.